L Number	Hits	Search Text	DB	Time stamp
1	141114	pva or polyvinylacetate or polyvinyl adj alcohol	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:37
2	1739012	coating or coated	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:18
3	83963	antiinflammatory or anti adj inflammatory	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:20
4	58652	steroid or steroidal	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:20
5	135290	implant or prosthesis	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:21
6	38180	drug near3 delivery	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:22
7	28353	hydrogel	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:22
8	0	(pva or polyvinylacetate or polyvinyl adj alcohol) with hydrogel same (coating or coated) same (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:24
9	5	(pva or polyvinylacetate or polyvinyl adj alcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:38
10	145566	pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:37
11	5	(pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:38
12	1	((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) same (antiinflammatory or anti adj inflammatory) and (implant or prosthesis)) not ((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:44

13	82	((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and ((implant or prosthesis) or (drug near3 delivery))) not ((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 09:47
14	13	((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) same (drug or (antiinflammatory or anti adj inflammatory)) and ((implant or prosthesis) or (drug near3 delivery))) not ((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 10:17
15	2	("5449382").PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 10:23
16	0	("nanoparticleorliposomeormicrosphere").PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 10:23
17	71585	nanoparticle or liposome or microsphere	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 10:24
18	7	(nanoparticle or liposome or microsphere) and (((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) same (drug or (antiinflammatory or anti adj inflammatory)) and ((implant or prosthesis) or (drug near3 delivery))) not ((pva or polyvinylacetate or polyvinyl adj alcohol or polyvinylalcohol) with hydrogel same (coating or coated) and (antiinflammatory or anti adj inflammatory) and (implant or prosthesis) and (steroid or steroidal) and (drug near3 delivery)))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 11:07
19	324	(623/1.42,23.59,23.57).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 11:29
20	61	((623/1.42,23.59,23.57).CCLS.) and (nanoparticle or liposome or microsphere)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 11:29
21	22	((623/1.42,23.59,23.57).CCLS.) and (nanoparticle or liposome or microsphere) same (coating or coated)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 13:02
22	2811	((424/423,425) or (604/891.1,93.01,288.01)).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 13:01
23	121	(((424/423,425) or (604/891.1,93.01,288.01)).CCLS.) and (nanoparticle or liposome or microsphere) same (coating or coated)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/01/29 13:02

	Document ID	K	Sq	Issue Da	Pag	Titl
1	US 3689634 A		U	19720905	7	PROTRACT
2	US 5304121 A		U	19940419	16	Drug de
3	US 5674241 A		D	19960829	12	Stent wi
4	US 5674192 A		U	19971007	16	Drug de
5	US 5954706 A		U	19990921	15	Drug de
6	US 6068859 A		U	20000530	35	Control
7	US 6197051 B1		U	20010306	8	Polycar
8	US 20020044965 A1		U	20020418	35	Control
9	US 6409716 B1		U	20020625	17	Drug de
10	US 20020091375 A1		U	20020711	10	Stent li
11	US 20020155144 A1		U	20021024	18	Biofunct
12	US 20030055028 A1		U	20030320	10	Method c
13	US 20030059463 A1		U	20030327	38	Medical

Brief Summary Text - BSTX (5):

In particular, implantable medical devices used for minimally invasive procedures in body conduits, such as for example in blood vessels, the esophagus or urethra may be provided with bio-compatible coatings. Among the various intraluminal prostheses commonly used today are vascular grafts which include endovascular grafts, stents and graft-stent combinations. Various types of stents are available such as wire stents and tubular stents. These constructions may be made from metals or polymers and may be of the balloon expandable type or the self-expanding type. Among the self-expanding type are those made from superelastic, shape-memory materials such as nitinol. Other devices which can benefit from such coatings include catheters, guide wires, trocars, introducer sheaths and the like.

Brief Summary Text - BSTX (8):

Biologically active agents have been incorporated into polymeric films for slow or controlled release of the active agent into the body. For example, U.S. Pat. No. 5,342,348 discloses porous polyurethane and PTFE stents having biodegradable polymeric filaments attached thereto which release drug over time. U.S. Pat. No. 5,383,928 discloses delivery of a drug using a stent-sheath structure made from both degradable and non-degradable polymers, such as ethylene vinyl acetate (EVA).

Brief Summary Text - BSTX (9):

Endoprostheses have also been developed for targeted drug delivery to sites within a body. Such endoprostheses can be coated with microporous materials having pores in which bio-active agents may be anchored for controlled delivery thereof over time. In particular, U.S. Pat. No. 5,449,382 to Dayton (hereinafter the "'382 patent") discloses a minimally invasive bio-activated endoprosthesis for vessel repair. This endoprosthesis is coated with a polymer having a microporous structure with a predetermined pore size and a bio-active substance disposed within these pores for elution therefrom. The coating described by the '382 patent is made from a polymeric solution which includes silicone, polyurethane, polyvinyl alcohol, polyethylene, biodegradable polylactic acid polymers, polyglycolic acid polymers, polyesters, hydrogels, tetrafluoroethylene, polytetrafluoroethylene, fluorosilicone etc. Admixed into one of these polymers is a bio-active agent, such as for example heparin, for controlled and prolonged release thereof.

Brief Summary Text - BSTX (12):

In particular, U.S. Pat. No. 5,133,742 to Pinchuk (hereinafter the "'742 patent") discloses a prosthesis formed from polycarbonate-urethane polymers. Such polycarbonate-urethane compositions are bio-compatible and less susceptible to bio-degradation and/or bio-erosion than simple polyurethane coatings. The '742 patent describes forming the polycarbonate-urethane polymer from the reaction of a polycarbonate diol, a diisocyanate and a chain extender in a suitable organic solvent. This polymer is then spun through a spinnerette into a filamentous vascular graft. Prostheses formed entirely from such a composition, however, are expensive to produce.

	Document ID	KSo	Issue Da	Pag	Titl
1	US 3689634 A	U	19720905	7	PROTRACT
2	US 5304121 A	U	19940419	16	Drug de
3	US 5674241 A	D	19960829	12	Stent wi
4	US 5674192 A	U	19971007	16	Drug de
5	US 5954706 A	U	19990921	15	Drug de
6	US 6068859 A	U	20000530	35	Control
7	US 6197051 B1	U	20010306	8	Polycarb
8	US 20020044965	U	20020418	35	Control
9	US 6409716 B1	U	20020625	17	Drug de
10	US 20020091375	U	20020711	10	Stent l
11	US 20020155144	U	20021024	18	Biofunc
12	US 20030055028	U	20030320	10	Method
13	US 20030059463	U	20030327	38	Medical

DOCUMENT-IDENTIFIER: US 20020091375 A1

TITLE: Stent lining

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Summary of Invention Paragraph - BSTX (4):

[0004] A number of different approaches have been taken to prevent post-angioplasty vessel reclosure. One such approach has been the placement of a medical prosthesis, e.g., an intravascular metal stent, to mechanically keep the lumen open. For example, an intravascular stent made of an expandable stainless steel wire mesh tube has been used to prevent post angioplasty restenosis and vessel reclosure. The stent may be formed of wire configured into a tube and is usually delivered into the body lumen using a catheter. The catheter carries the prosthesis in a reduced-size form to the desired site. When the desired location is reached, the prothesis is released from the catheter and expanded so that it engages the lumen wall. Stents are typically fabricated from metals, alloys, or plastics and remain in the blood vessel indefinitely.

Detail Description Paragraph - DETX (9):

[0030] Other hydrogel polymers, such as collagen, albumin, derivitized albumin, gelatin, polyvinyl alcohol (PVA), cellulosics, alginates, acrylics, HEMA, polyethylene glycols, polyethylene oxides, polyacids, polyanhydrides, and polyacrylamides can be used to coat the balloon. Like the poly(acrylic acid) polymer coating, these hydrogel polymers are released from the balloon onto the inner surfaces of a stent by compression of the coated balloon against the stent. The hydrogel polymers used are swellable but not dissolvable. As a result, a sheath over the hydrogel-coated balloon is not required to prevent loss of the hydrogel coating prior to release onto the inner surfaces of the stent. However, a sheath may be used in any of the embodiments discussed herein to facilitate placement of the catheter and/or deployment of the catheter or stent. For simultaneous stent deployment and lining, an expansible stent in a contracted form is placed over the hydrogel-coated balloon portion of the catheter prior to introduction of the catheter/stent assembly into the body A drug such as an anti-thrombogenic agent may be applied to the coating or incorporated into the coating. For example, a solution of 10,000 units sodium heparin (Fisher Scientific, Pittsburgh, PA; USP Grade; 1000 units/ml which is then added to 650 cc distilled water) may be applied to the hydrogel coating by dipping the coated catheter into the heparin solution for about 1 minute at room temperature.

[0019] Calcium phosphate cements, like most other cements (e.g. Portland cement) release heat of hydration when hydrating and setting. When setting fast (which is an important requirement in certain applications), this heat may not dissipate fast enough and temperature of cemented area increases, sometimes to a level high enough to damage, e.g. crack, the cement. More importantly, if the cement is applied in human body, e.g. as part of an implant, this temperature increase may damage the surrounding biological constituents such as cells, proteins, and enzymes when the heat is rapidly dissipated upon setting. The novel cement system disclosed here, experiences a relatively mild temperature rise during setting, i.e. from room temperature, .about.20.degree. C., to a maximum near body temperature, .about.37.degree. C. This cement also exhibits excellent mechanical properties. For example, its compressive strength is generally greater than 10 MPa, and in certain compositions, >30 MPa.

Detail Description Paragraph - DETX (22):

[0054] Stainless steel metallic substrates (316 L) were coated with CPC-HA/SG-HA coatings as described in Example 1. In order to assess the possibility of use of CPC-HA for controlled drug release, amethopterin (Sigma Chemicals, USA) was employed as a model drug, in an amount of 5% based on solid phase content of CPC-HA precursors. The drug was mixed with the colloidal suspension of the precursors, before dip coating was performed. All other procedures, e.g. incubation, were performed as in Example 1. During incubation period, 20 .mu.m thick CPC-HA coating precipitated encapsulating the drug molecules within the nanopores of the crystallizing HA. After encapsulation, a drug release study was conducted by immersion of the substrates into 20 ml of phosphate buffer saline (PBS, pH=7.4) at constant ratio of (CPC coating weight)/(volume of PBS) of 1 mg/ml. A reference sample coated with hydrogel film was also tested for drug release kinetics. The hydrogel film was prepared by dipping the CPC-HA layer containing the drug into a polymer solution containing 3% polyvinyl alcohol. After drying, the weight gain of the .about.20 mg CPC-HA layer due to the additional hydrogel coating was .about.0.5 mg, corresponding to the content of polymer film in the CPC-HA matrix of about 2.5%. The samples of PBS liquid with released drug were periodically taken out (i.e. entire liquid was emptied) and refilled with the same amount of 20 ml of PBS. The drug concentration in the supernatant was determined via an UV-Visible spectroscopy. FIG. 7 illustrates the drug release kinetics for the time period of 3 days, for both types of drug-loaded CPC-HA. Although a burst effect was detected for both coatings over the initial period of about 8 h, a slower release is evident for the sample post-coated with hydrogel. A linear relationship was obtained between the amount of drug released and (time).sup.1/2 for the release time greater than 8 h. The sustain release period for 8 to 60 h is well described by Fick's law of diffusion. The release kinetics is modified due to the presence of a post coated thin hydrogel film, suggesting a decreased diffusivity of the drug molecules. However, the burst effect can offer an advantage in the early period after orthopedic/dental surgeries if anti inflamatory agents were incorporated into the implant devices to avoid acute or severe inflammatory response.

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	Document ID	KSc	Issue Da	Pag	T
1	US 3689634 A	U	19720905	7	PROTF
2	US 5304121 A	U	19940419	16	Drug
3	US 5674241 A	D	19960829		Stent
4	US 5674192 A	U	19971007	16	Drug
5	US 5954706 A	U	19990921	15	Drug
6	US 6068859 A	U	20000530	35	Contr
7	US 6197051 B1	U	20010306	8	Polyc
8	US 20020044965	U	20020418	35	Contr
9	US 6409716 B1	U	20020625	17	Drug
10	US 20020091375	U	20020711	10	Stent
11	US 20020155144	U	20021024	18	Biofu
12	US 20030055028	U	20030320	10	Metho
13	US 20030059463	U	20030327	38	Medic

Brief Summary Text - BSTX (9):

Various embodiments may include one or more of the following features. The catheter is adapted for insertion in a blood vessel, and the expandable portion is an inflatable dilatation balloon adapted for inflation at pressures in the range for effecting widening of a stenosed blood vessel. The pressure is in the range of about 1 to 20 atmospheres. The hydrogel polymer and drug are effective to release about 20% or more of the drug during inflation in the pressure range. The compression is effective to deliver the drug over a duration of about 10 minutes or less. The hydrogel polymer coating is about 10 to 50 microns thick in the swelled, uncompressed state. The hydrogel polymer is selected from the group consisting of polycarboxylic acids, cellulosic polymers, gelatin, polyvinylpyrrolidone, maleic anhydride polymers, polyamides, polyvinyl alcohols, and polyethylene oxides. The hydrogel polymer is polyacrylic acid. The drug is an anti-thrombogenic drug selected from the group consisting of heparin, PPack, enoxaprin, aspirin and hirudin. The drug is an anti-proliferative drug selected from the group consisting of monoclonal antibodies, capable of blocking smooth muscle cell proliferation, heparin, angiopeptin and enoxaprin. The expandable portion is adapted for application of heat to the polymer material to control the rate of administration. The catheter further comprises a sheath member, extendable over the balloon to inhibit release of the drug into body fluids during placement of the catheter. The balloon catheter is a perfusion catheter having an expandable balloon. The expandable portion includes a stent, mountable in the blood vessel by expansion thereof. The drug is bound in the hydrogel polymer for slow time release of the drug after the compression of the hydrogel polymer by the expansion. The hydrogel polymer is a polyacrylic acid including an ammonium anion and the drug is heparin. The stent is expandable by a balloon. The catheter where the stent and balloon both include the swellable hydrogel coating incorporating the drug. The expandable portion is prepared by introducing an aqueous solution of the drug to the hydrogel polymer coating, the catheter is introduced to the body lumen to position the expandable portion at the point of desired drug application, and the expandable portion is expanded to enable delivery of the drug by compression of the hydrogel polymer coating against the wall at the body lumen. The expandable portion is positioned at a point of occlusion in the blood vessel and expanding the expandable portion at pressures sufficient to simultaneously dilate the vessel and deliver the drug by compression of the hydrogel polymer coating.

Drawing Description Text - DRTX (5):

FIG. 1b is an enlarged cross-sectional view of an embodiment of the drug delivery balloon catheter of the invention being moved through a vessel toward an occlusion to be treated.

Drawing Description Text - DRTX (9):

FIG. 2 is an enlarged cross-sectional view of another embodiment of the drug delivery balloon catheter of the invention including a sheath for covering the

(12) **United States Patent**
Roorda et al.

(10) **Patent No.: US 6,663,880 B1**
(45) **Date of Patent: Dec. 16, 2003**

(54) **PERMEABILIZING REAGENTS TO INCREASE DRUG DELIVERY AND A METHOD OF LOCAL DELIVERY**

(75) Inventors: **Wouter E. Roorda**, Palo Alto, CA (US); **Vinayak D. Bhat**, Sunnyvale, CA (US); **Paul M. Consigny**, Morgan Hill, CA (US)

(73) Assignee: **Advanced Cardiovascular Systems, Inc.**, Santa Clara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 78 days.

(21) Appl. No.: 09/997,706

(22) Filed: Nov. 30, 2001

(51) Int. Cl.[7] A61F 2/02; A61F 2/06

(52) U.S. Cl. 424/423; 623/1.42; 623/1.43

(58) Field of Search 623/1.42, 1.43; 424/423

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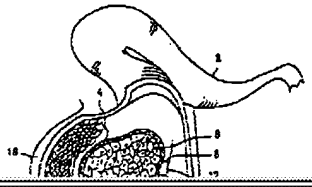
(List continued on next page.)

Primary Examiner—Carlos A. Azpuru
(74) *Attorney, Agent, or Firm*—Squire, Sanders & Dempsey, L.L.P.

(57) **ABSTRACT**

A composition and a method for increasing the permeability of membrane junctions or cell membranes for delivery of a drug to target tissues are disclosed. Also disclosed are methods and devices for local drug delivery.

8 Claims, 6 Drawing Sheets



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1	US 20030204239	U	20031030	10	Endova
2	US 20030195613	U	20031016	8	Stent
3	US 20030187493	U	20031002	18	Coated
4	US 20030181973	U	20030925	27	Reduce
5	US 20030125803	U	20030703	15	Carrie
6	US 6585763 B1	U	20030701	34	Implan
7	US 20030060873	U	20030327	16	Metall
8	US 20030044514	U	20030306	8	Using
9	US 20030036794	U	20030220	23	Coated
10	US 20030028244	U	20030206	19	Coated
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16	US 6395029 B1	U	20020528	24	Sustai
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19	US 5980551 A	U	19991109	5	Compos
20	US 5609629 A	U	19970311	12	Coated
21	US 4749585 A	U	19880607	5	Antibi
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DOCUMENT-IDENTIFIER: US 20030044514 A1

TITLE: Using supercritical fluids to infuse therapeutic on a medical device

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Current US Classification, US Secondary Class/Subclass - CCSR (3):
623/1.42

Detail Description Paragraph - DETX (23):
[0033] While a single stent has been described in some of the above embodiments other medical devices may also be coated using each of these various embodiments. The range of medical devices that may be coated include: expandable and self expanding stents, balloon catheters, vena-cava filters, aneurysm coils, stent-grafts, a-v shunts, angio-catheters, and PICC's. Moreover, in addition to using paclitaxel as the therapeutic the above invention may also be employed with a wide variety of other therapeutics, which include, for example: pharmaceutically active compounds, proteins, cells, oligonucleotides, ribozymes, anti-sense oligonucleotides, DNA compacting agents, gene/vector systems (i.e., any vehicle that allows for the uptake and expression of nucleic acids), nucleic acids (including, for example, recombinant nucleic acids; naked DNA, cDNA, RNA; genomic DNA, cDNA or RNA in a non-infectious vector or in a viral vector and which further may have attached peptide targeting sequences; antisense nucleic acid (RNA or DNA); and DNA chimeras which include gene sequences and encoding for ferry proteins such as membrane translocating sequences ("MTS") and herpes simplex virus-1("VP22")), and viral, liposomes and cationic and anionic polymers and neutral polymers that are selected from a number of types depending on the desired application. Non-limiting examples of virus vectors or vectors derived from viral sources include adenoviral vectors, herpes simplex vectors, papilloma vectors, adeno-associated vectors, retroviral vectors, and the like. Non-limiting examples of biologically active solutes include anti-thrombogenic agents such as heparin, heparin derivatives, urokinase, and PPACK (dextrophenylalanine proline arginine chloromethylketone); antioxidants such as probucol and retinoic acid; angiogenic and anti-angiogenic agents and factors; agents blocking smooth muscle cell proliferation such as rapamycin, angiopeptin, and monoclonal antibodies capable of blocking smooth muscle cell proliferation; anti-inflammatory agents such as dexamethasone, prednisolone, corticosterone, budesonide, estrogen, sulfasalazine, acetyl salicylic acid, and mesalamine; calcium entry blockers such as verapamil, diltiazem and nifedipine; antineoplastic/antiproliferative/anti-mitotic agents such as paclitaxel, 5-fluorouracil, methotrexate, doxorubicin, daunorubicin, cyclosporine, cisplatin, vinblastine, vincristine, epothilones, endostatin, angiostatin and thymidine kinase inhibitors; antimicrobials such as triclosan, cephalosporins, aminoglycosides, and nitorfurantoin; anesthetic agents such as lidocaine,

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	Document ID	KSc	Issue Da	Pag	Tit
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2	US 20030195613	U	20031016	8	Stent
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9	US 20030036794	U	20030220	23	Coated
10	US 20030028244	U	20030206	19	Coated
11	US 20030028243	U	20030206	19	Coated
12	US 20030028242	U	20030206	14	Angiop
13	US 6497729 B1	U	20021224	19	Implan
14	US 20020165617	U	20021107	17	Phosph
15	US 20020065546	U	20020530	14	Stent
16	US 6395029 B1	U	20020528	24	Sustai
17	US 20020026236	U	20020228	21	Delive
18	US 6280411 B1	U	20010828	10	Locali
19	US 5980551 A	U	19991109	5	Compos
20	US 5609629 A	U	19970311	12	Coated
21	US 4749585 A	U	19880607	5	Antibi
22	US 4542539 A	U	19850924	7	Surgic

US-PAT-NO: 5609629

DOCUMENT-IDENTIFIER: US 5609629 A

TITLE: Coated implantable medical device

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Detailed Description Text - DETX (44):

The bioactive material may, of course, be deposited over the structure 12 as a smooth film or as a layer of particles and in a manner that different surfaces of the device contain different bioactive agents. In the latter case, the particle size may affect the properties or characteristics of the device 10, such as the smoothness of the uppermost porous coating 20, the profile of the device 10, the surface area over which the bioactive material layer 18 is disposed, the release rate of the bioactive material, the formation of bumps or irregularities in the bioactive material layer 18, the uniformity and strength of adhesion of the bioactive material layer 18, and other properties or characteristics. For example, it has been useful to employ micronized bioactive materials, that is, materials which have been processed to a small particle size, typically less than 10 .mu.m in diameter. However, the bioactive material may also be deposited as microencapsulated particles, dispersed in liposomes, adsorbed onto or absorbed into small carrier particles, or the like.

Current US Original Classification - CCOR (1):

623/1.43

EAST Browser - L21: (22) 19 and (nano... | US 5980551 A | Tag: S | Doc: 19/22 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	KSc	Issue Da	Pag	Tit
1	US 20030204239	U	20031030	10	Endova
2	US 20030195613	U	20031016	8	Stent
3	US 20030187493	U	20031002	18	Coated
4	US 20030181973	U	20030925	27	Reduce
5	US 20030125803	U	20030703	15	Carrie
6	US 6585763 B1	U	20030701	34	Implan
7	US 20030060873	U	20030327	16	Metall
8	US 20030044514	U	20030306	8	Using
9	US 20030036794	U	20030220	23	Coated
10	US 20030028244	U	20030206	19	Coated
11	US 20030028243	U	20030206	19	Coated
12	US 20030028242	U	20030206	14	Angiop
13	US 6497729 B1	U	20021224	19	Implan
14	US 20020165617	U	20021107	17	Phosph
15	US 20020065546	U	20020530	14	Stent
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19	US 5980551 A	U	19991109	5	Compos
20	US 5609629 A	U	19970311	12	Coated
21	US 4749585 A	U	19880607	5	Antibi
22	US 4542539 A	U	19850924	7	Surgic

US-PAT-NO: 5980551

DOCUMENT-IDENTIFIER: US 5980551 A

TITLE: Composition and method for making a biodegradable drug delivery stent

---------- KWIC ---------

Abstract Text - ABTX (1):
A stent or vascular graft for supporting a blood vessel or organ lumen is coated with a biodegradable, resorbable and hemocompatible surface substrate. Biologically active microspheres which controllably release the biologically active agent into the vessel wall or organ to inhibit restenosis of the stent is embedded in the stent substrate. The biologically active microspheres include encapsulated PGE1 in a water soluble polyethylene glycol mix, which over a period of time dissolves and releases the PGE1 into the vessel wall or organ.

Brief Summary Text - BSTX (11):
Poly-L-lactic acid (PLLA)/Poly-caprolactone (PCL) blends of aliphatic polyester polymers have proven to be both biodegradable, resorbable and hemocompatible. Depending on the ratio of PLLA to PCL, these coatings can provide a benign substrate that provides a microporous structure that can efficiently be impregnated with biologically active microsphere such as liposomes in the range of 20 nm to 1000 nm.

Brief Summary Text - BSTX (12):
It is therefore an object of the invention to provide a stent having a PLLA/PCL coating substrate formed thereon and impregnating the coating substrate with biologically active microspheres.

Brief Summary Text - BSTX (13):
It is a further object of the invention to provide a stent coating whereby the coating substrate is coated with a layer of PGE1-encapsulated liposomes which release PGE1 over an extended period of time.

Brief Summary Text - BSTX (15):
The present invention provides a stent coated with a biodegradable, resorbable and hemocompatible surface substrate. The substrate is impregnated with biologically active microspheres which controllably release the biologically active agent into the vessel wall to inhibit restenosis of the stent. The biologically active microspheres include encapsulated PGE1 in a

	Document ID	K	So	Issue-Da	Pag	Title
1	US 6676971 B2		U	20040113	13	Embolic con
2	US 20040005345		U	20040108	27	Formulatior
3	US 6673814 B2		U	20040106	16	Delivery sy
4	US 20040001871		U	20040101	42	Lapachone c
5	US 6669959 B1		U	20031230	8	Modulated r
6	US 6663881 B2		U	20031216	75	Therapeutic
7	US 6660301 B1		U	20031209	15	Injectable
8	US 20030219466		U	20031127	35	Method of n
9	US 6652883 B2		U	20031125	11	Tissue bulk
10	US 6641833 B2		U	20031104	80	Methods for
11	US 6641832 B2		U	20031104	17	Increasing
12	US 20030198599		U	20031023	23	Novel imagi
13	US 6632446 B1		U	20031014	29	Coating sub
14	US 20030191458		U	20031009	28	Light-activ
15	US 20030180344		U	20030925	21	Bioresorbak
16	US 20030170287		U	20030911	12	Drug delive
17	US 6613358 B2		U	20030902	61	Sustained-r
18	US 6599517 B1		U	20030729	6	Bone tissue
19	US 20030129214		U	20030710	18	Methods of
20	US 6585993 B2		U	20030701	17	Controlled
21	US 6585763 B1		U	20030701	34	Implantable
22	US 6576263 B2		U	20030610	24	Delivery sy
23	US 20030099682		U	20030529	31	Apparatus a
24	US 6569441 B2		U	20030527	85	Therapeutic
25	US 6565842 B1		U	20030520	22	Crosslinkak
26	US 20030091611		U	20030515	54	Devices anc
27	US 20030091609		U	20030515	10	Medical dev
28	US 20030082224		U	20030501	15	Compositior
29	US 20030073972		U	20030417	28	Implant del
30	US 6544543 B1		U	20030408	17	Periodic cc
31	US 6544541 B1		U	20030408	55	Devices anc
32	US 6541022 B1		U	20030401	28	Mineral anc
33	US 20030045865		U	20030306	7	Compositior
34	US 20030039675		U	20030227	70	Therapeutic
35	US 20030036794		U	20030220	23	Coated impl
36	US 20030031699		U	20030213	16	Polymer con
37	US 6506399 B2		U	20030114	21	Biodegradak
38	US 20030007991		U	20030109	41	Devices inc
39	US 20030003128		U	20030102	5	Dental pros
40	US 6497729 B1		U	20021224	19	Implant coa
41	US 6491938 B2		U	20021210	84	Therapeutic
42	US 6479067 B2		U	20021112	82	Methods for
43	US 20020165617		U	20021107	17	Phospholipi
44	US 6471993 B1		U	20021029	40	Three-dimer
45	US 20020155167		U	20021024	45	Self-settir
46	US 20020155144		U	20021024	18	Biofunctior
47	US 20020155137		U	20021024	44	Methods anc
48	US 6465001 B1		U	20021015	28	Treating me
49	US 6383509 B1		U	20020507	17	Biodegradak
50	US 6375985 B1		U	20020423	16	System and
51	US 6375972 B1		U	20020423	15	Sustained r
52	US 6368612 B1		U	20020409	33	Devices for
53	US 6365385 B1		U	20020402	18	Methods of
54	US 20020037308		U	20020328	18	Angiogenic
55	US 6358989 B1		U	20020319		Therapeutic
56	US 6358532 B2		U	20020319		Calcium phc
57	US 6355275 B1		U	20020312		Embolizatic

DOCUMENT-IDENTIFIER: US 20030129214 A1

TITLE: Methods of enhancing the biocompatibility of an implantable medical device

---------- KWIC ---------

Current US Classification, US Primary Class/Subclass - CCPR (1):
424/423

Detail Description Paragraph - DETX (59):

[0074] A hydrogel matrix comprising an MCP-1 antagonist may be coated on at least one surface, or on all surfaces, of device body 12. Representative MCP-1 antagonists that can be dispersed throughout a hydrogel include: antisense MCP-1 nucleic acid molecules, dsRNA molecules, vectors containing transgenes encoding MCP-1 antagonists (such as ribozyme transgenes which target MCP-1 mRNA, and MCP-1 blocking peptides), and may be formulated for optimal release of MCP-1 antagonist polypeptides such as MCP-1 antibodies and blocking peptides. For example, MCP-1 antibodies may be contained in a hydrogel reservoir and released over time in a controlled fashion. Surface layer 16 made from a hydrogel may also be used, for example, to deliver [illegible] containing nucleic acid sequences encoding MCP-1 antagonists, as well as naked DNA encoding MCP-1 antagonists. There are reports of successful incorporation of enzymes and living cells into hydrogel matrices (e.g., U.S. Pat. Nos. 4,004,979, 4,452,892, 4,647,536 and 5,648,252) as well as successful incorporation of virus particles into hydrogel as a vaccine (U.S. Pat. No. 5,529,777). Therefore, in accordance with the invention, hydrogels are also useful to deliver MCP-1 antagonists incorporated in a viral vector such as, for example, adenovirus, AAV, vaccinia virus and retroviral vectors.

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1	US 6676971 B2		U	20040113	13	Embolic com
2	US 20040005345		U	20040108	27	Formulation
3	US 6673814 B2		U	20040106	16	Delivery sy
4	US 20040001871		U	20040101	42	Lapachone c
5	US 6669959 B1		U	20031230	8	Modulated r
6	US 6663881 B2		U	20031216	75	Therapeutic
7	US 6660301 B1		U	20031209	15	Injectable
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22	US 6576263 B2		U	20030610	24	Delivery sy
23	US 20030099682		U	20030529	31	Apparatus a
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25	US 6565842 B1		U	20030520	22	Crosslinkab
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30	US 6544543 B1		U	20030408	17	Periodic co
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41	US 6491938 B2		U	20021210	84	Therapeutic
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45	US 20020155167		U	20021024	45	Self-settir
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54	US 20020037308		U	20020328	18	Angiogenic
55	US 6358989 B1		U	20020319		Therapeutic
56	US 6358532 B2		U	20020319		Calcium pho
57	US 6355275 B1		U	20020312		Embolizati

US-PAT-NO: 6569441

DOCUMENT-IDENTIFIER: US 6569441 B2

TITLE: Therapeutic inhibitor of vascular smooth muscle cells

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Drawing Description Text - DRTX (95):

To prepare one embodiment of the invention, a cytoskeletal inhibitor, e.g., cytochalasin B, is incorporated into biodegradable poly (DL-lactide-co-glycolide) microparticles or into nanoparticles. The microparticles are about 1 to about 50 .mu., preferably 4.mu.to about 15.mu., and more preferably about 2 to about 15.mu., in diameter. The nanoparticles are about 5 to about 500 nanometers, preferably about 10 to about 250 nanometers, and more preferably about 50 to about 200 nanometers, in diameter. The microparticles or nanoparticles comprising the therapeutic agent can be further embedded in or on an implantable device, e.g., in a stent coating, or delivered in a suitable liquid vehicle by an implantable device, e.g., via an infusion catheter. Preferably, the sustained release dosage form is biodegradable and, preferably, biodegrades over about 30-120 days. The sustained release dosage form is preferably administered during the procedural vascular trauma.

Current US Original Classification - CCOR (1):

424/423

Current US Cross Reference Classification - CCXR (5):

604/890.1

Other Reference Publication - OREF (438):

Sanderson, J.A., et al., "Antibody-Coated Microspheres for Drug Delivery to Prevent Restenosis", Circulation, 90, Abstract No. 2734, p. I-508, (Oct., 1994).